PROFESSIONAL ENGINEER

Official Publication of American Association of Engineers

Voice of the Engineer

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Another Chapter in the History of the American Association of Engineers with special reference to Standards of Classification and Compensation

Vol. 45 No. 3

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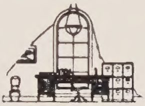

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The Market for Engineering Services Before and After VJ Day

M. E. McIVER, Editor

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It is the wish of the

Officers and Directors

of the

American Association of Engineers

that all of its members

and in fact

Engineers everywhere

will have had a Very Merry Christmas

and will have

the brightest of bright

New Year

Another Chapter in the Association's History

Employment Service

Two activities initiated by the American Association of Engineers once considered "unprofessional," now entirely commendable. In previous issues we have discussed Recognition of the Engineer, Public Relations, Professional Standards, The Wagner Act, Unity in the Profession, and Civic Consciousness, reviewing several campaigns initiated by the Association designed to acquaint the public with the engineers' many contributions to our social and economic progress. This brief outline of the Association's work on the subject of Remuneration completes the history to date, except that we will reproduce in the next issue an article by the late Dr. D. B. Steinman, in which he sets forth the purpose of the A.A.E.

A.A.E.'s history, published in 1934-1935, carried the story of two Association activities. The first was the Association's establishment of an employment bureau, the nucleus of what is hoped might become a "national clearing house for engineering employment". The second was its representation in collective bargaining of certain groups of engineers, notoriously underpaid. So startling were these innovations that they overshadowed the important (and thoroughly professional) techniques which the Association developed in furtherance of its campaigns to secure for engineers compensation commensurate with services rendered, consistent with engineers' investment in education and training, in favorable ratio to wages paid non-professional workers, and in line with living costs.

Since 1935, there have been no spectacular A.A.E. campaigns for improvement of the salaries of particular groups, but A.A.E. has extended and improved the technique developed in earlier campaigns. It has used its energies and resources in practical research and made its findings available to all groups for use in their independent campaigns for adequate remuneration.

It has, for example, developed standards of classification and compensation and made studies of the market for engineering services based on data assembled by its employment service. It has clarified benefits under the Fair Labor Standards Act. All this material has been made available to engineering societies, to schools of engineering, and to groups campaigning for fair compensation. In this story these activities will be briefly described.

Standards of Classification and Compensation

Arthur Richards, past president of A.A.E., was asked in 1936 to prepare new Standards of Classification and Compensation for Engineering Positions. Mr. Richards did a quick preliminary survey of salaries paid municipal engineers to test the feasibility of the project at that time. He learned that the salaries of municipal engineers (which had been cut during the darkest days of the depression from ten to eighty per cent) had not rebounded uniformly in all areas. This, he explained, would make any standards developed at that time unrealistically low. He proposed that the Association defer the project until 1938 or 1939. The Board of Directors accepted his advice. At the meeting of the Board in the fall of 1938, Mr. Richards was asked to serve as chairman of the Committee on Standards of Classification and Compensation and get the project under way.

In the spring of 1939, the questionnaire was widely distributed. The job was finished and the Standards were ready for distribution early in the fall. They reflected the ability and experience of Arthur Richards, who, through 20 years of activity in the field of classification of engineering positions and standards of compensation, had become familiar with every aspect of such projects. In 1942, again under Mr. Richards's direction, the Standards were revised and republished. Although prepared primarily for engineers in public service they were widely used by industry and by committees of other engineering societies interested in the "economic status" of employed engineers.

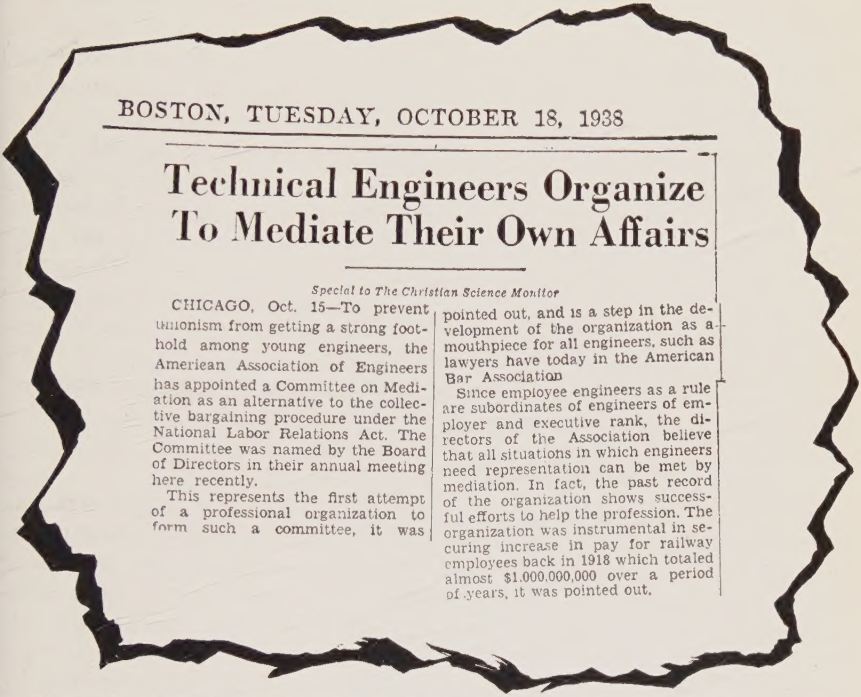
Impact of Federal Labor Laws on Engineers

Observing closely the impact of the Fair Labor Standards Act on professional engineers, A.A.E.'s Mediation Committee made its first comprehensive report on the operation of the Act in an article in PROFESSIONAL ENGINEER (December, 1940) entitled "Status Quo and Status Quid". This report emphasized the inter-operation of the Wagner Act and Fair Labor Standards Act. It showed that engineers classified as "professional, administrative, or executive" employees were being deprived of over-time pay which the Act made mandatory for employees not so classified. A.A.E. pointed out the unhappy fact that if engineers obtained overtime benefits by classification as non-professional employees, they became eligible for assignment by the National Labor Relations Board to heterogeneous bargaining units. Retaining professional status and forfeiting overtime, engineers might actually receive less in salary than their non-professional subordinates whose base pay was greatly increased by overtime rewards.

At this time, the Administrator of the Fair Labor Standards Act arbitrarily ruled that any employee (regardless of professional qualifications or duties) who received less than $200 a month would be classified as non-professional. In 1951, the Mediation Committee reported changes in the status of engineers under the Fair Labor Standards Act as amended and in accordance with new administrative interpretations and regulations. The article explained these new procedures—not only the new line of demarcation (at $75.00 a week instead of $200 a month) but other situations arising from change in work assignments, deductions for absence, and the operation of pension plans.

Public Relations Committee of the Whole Supplies Information on Problems Related to Remuneration

Through the Association's "Public Relations Committee of the Whole" and its subdivisions (Clipping Club, Listeners In, and Fact Finders)



BOSTON, TUESDAY, OCTOBER 18, 1938

Technical Engineers Organize To Mediate Their Own Affairs

Special to The Christian Science Monitor

CHICAGO, Oct. 15—To prevent unionism from getting a strong foothold among young engineers, the American Association of Engineers has appointed a Committee on Mediation as an alternative to the collective bargaining procedure under the National Labor Relations Act. The Committee was named by the Board of Directors in their annual meeting here recently.

This represents the first attempt of a professional organization to form such a committee, it was pointed out, and is a step in the development of the organization as a mouthpiece for all engineers, such as lawyers have today in the American Bar Association

Since employee engineers as a rule are subordinates of engineers of employer and executive rank, the directors of the Association believe that all situations in which engineers need representation can be met by mediation. In fact, the past record of the organization shows successful efforts to help the profession. The organization was instrumental in securing increase in pay for railway employees back in 1918 which totaled almost $1.000.000,000 over a period of .years, it was pointed out.

Type of nation-wide publicity received by the Association during its campaign to amend the National Labor Relations Act.

A.A.E. was able to get information which pinpointed many of the economic problems of the profession. A great deal of material, for example, on "free engineering services" offered by manufacturers and by retailers was sent to A.A.E. headquarters. Sometimes the material was used in special articles in PROFESSIONAL ENGINEER, sometimes in its "Rahs and Rahsberries" column.

A "Rah" for mentioning or crediting engineers with an achievement: A "Rahsberry" when the engineer's name not mentioned, or credit not given to engineers for a specific piece of work.

Outstanding in the collection of clippings on "free or unapproved" services by engineers in private practice was one discussed in the August, 1940 issue of PROFESSIONAL ENGINEER entitled "Kindly Hold the Bag," which indicated clearly that the public needs to be educated in regard to "principles of professional conduct" which impose restrictions on the amount and kind of free service that can legitimately be asked of engineers in private practice.

A great deal of material supplied by the "Public Relations Committee of the Whole" indicated ways in which engineers could improve their social and economic status by their own effort. It showed that appearance, speech, mannerisms, and other personality factors had a tremendous influence on employability and compensation. A.A.E.'s employment service made good use of this material in advising engineers, and a great deal of it was incorporated in A.A.E.'s "surveys of the market for engineering services."

PROFESSIONAL ENGINEER reported new specialties for which engineers might profitably qualify by additional study, by reading, and by attendance at technical society meetings. A series of articles which emphasized the value of technological education in profitable pursuits outside the scope of pure engineering appeared in PROFESSIONAL ENGINEER under caption of "Order of Alexander"—biographical sketches of men who, like Alexander the Great, sought new worlds to conquer.

From the employment service and from the Public Relations Committee of the Whole A.A.E. secured authoritative data on the operation of the "40 year deadline." This trend was reported in surveys of the market for engineering services, and indicated that a great many of the employers who specified an age limit demanded men under 35—a disconcerting number refusing to consider men over 30. A.A.E.'s contribution to the "Production Show of the Chicago Technical Societies Council" was a panel discussion of "The Employment Status of Technical Men Over 40" and the main talks were briefed in PROFESSIONAL ENGINEER, March, 1947 issue. Dr. Arthur Steinhaus who discussed the physiological and psychological aspects of the problem, admitting that there is inevitable physical deterioration with advancing age (impairment of vision and hearing, high blood pressure, obesity, etc.) emphasized compensatory factors and preventives that offset physical deterioration (experience, judgment, stability, etc.). He urged preventives in the form of intelligent care of the body and in what he termed "a first aid kit" to guard against psychological difficulties. This kit, he said, included four important items:

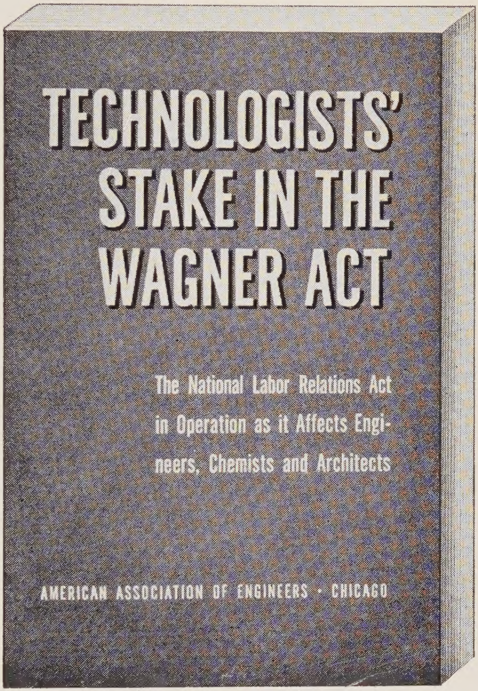
1. A very good friend to whom one can speak without inhibitions;
2. A hobby of absorbing interest;
3. A cause, greater than oneself, to which one can make a real contribution;
4. A philosophy of life that satisfactorily explains to the individual the world and his relation to it.

Frequently since Dr. Steinhaus made this talk, A.A.E. has found opportunity to re-state his theories in PROFESSIONAL ENGINEER for the benefit of new members and to remind others of the practical guards against age discrimination which he set forth. This accounts in part for the emphasis on "hobbies" in PROFESSIONAL ENGINEER (March, 1955).

Using Employment Service Records

Valuable as the information is which is sent in by members, A.A.E.'s most thorough studies of engineering employment, compensation, and related factors are based on the files of the employment service. Such records are more reliable sources of information on which to base estimates of salary levels and of employers' requirements than questionnaires ad-

The Association's book entitled "Technologists' Stake in the Wagner Act" was exceptionally well received by engineers and industry. It received much favorable comment. The American Bar Association Journal, in its review, said that "the book is about law and procedures—not propaganda for a point of view . . . It is a book that should never have been necessary to write in America. It was, however, made necessary by governmental action . . . The authors meant their volume to be practical and useful, and it is."



TECHNOLOGISTS' STAKE IN THE WAGNER ACT

The National Labor Relations Act in Operation as it Affects Engineers, Chemists and Architects

AMERICAN ASSOCIATION OF ENGINEERS · CHICAGO

dressed to individual engineers or the public statements made by employers in formal addresses.

In expansive mood at society meetings or school commencement ceremonies, employer-engineers voice some fairly ethereal desires with regard to the qualifications their companies demand in engineering employees. A.A.E. has more faith in the requirements set forth by prospective employers in the job orders filed with its employment service where the employer states the qualities and attributed for which he is willing to pay a premium. Analyzed and tabulated these job orders (in sufficient volume and covering a definite period of time) constitute a most concrete summary of consumer demand in the field of engineering employment.

Engineers who have not been notably successful are inclined to ignore questionnaires from their societies or from government agencies which seek intimate information on their careers. Others, knowing that their replies may be handled by acquaintances or potential employers, not being under oath, may feel justified in painting a rather rosy picture of the jobs they have held and the salaries they have earned. Both factors tend to make averages based on the answers to questionnaires unrealistically high.

In its studies of the market for engineering services, A.A.E. has used four types of resources supplied by its employment service:

First, job orders, summarizing or quoting the requirements set forth by an employer for the job or jobs he is trying to fill:

Second, the applicants' file cards on which each applicant records a history of his employment (verified by the employment service) which includes descriptions of jobs held, salaries received, and other data in retraining, personal qualificatitons, registration status, etc.;

Third, the employment service's record of placements which includes a description of each job filled and its salary;

Fourth, replies to A.A.E.'s Employ-O-Gram.

The Employ-O-Gram is a bulletin issued periodically which A.A.E. sends to a large, but selective list of employers listing (anonymously) men who have registered for employment service. EOG tabulates certain information about each candidate (age, training, experience, registration status, salary and type of position desired). By keeping tab on the number of requests for interviews employers address to each applicant on the list, A.A.E. can detect trends in the market for certain branches of engineering, for specialties, and for combinations of training in two or more branches of engineering. Fluctuatitons in standards of compensation for particular types of positions become apparent. Age discriminatiton is easily recognized as an increasing or diminishing factor whenever the market for engineering services is particularly active or becomes sluggish.

A.A.E.'s quick survey of the market for engineering services 6 months before and 6 months after VJ Day was based principally on job orders and EOG responses.* Its monumental undertaking in this field, "Market for Engineering Services, 1940"** was a study based on job orders, applicants' file, and the record of placements for the years 1929-1939. As the editors explained, they "stepped back to 1929 to sight, along the intervening years, market conditions in 1940, and to anticipate the trends that must become apparent between 1940-1950."

E. C. Shuman, then professor of civil engineering at Illinois Technical Institute, now with Owens-Illinois Glass Company, Kaylo Division, president of the Association when the 1940 Survey of the Market was initiated. He became fascinated by the wealth of information which the employment service files yielded and the many possible cross-sections which could be made, each revealing important facts about major "social and economic" problems.

For example, Section III of the survey, which analyzed job orders, indicated the qualities which employers sought in engineers—broad and sound training in fundamentals, good appearance, grooming, poise, ability to state ideas clearly in speech or writing, specific experience, initiative, leadership, age limitations, etc. Particularly noticeable in this section of

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*Footnote, Professional Engineer, June, 1946.

**Footnote Professional Engineer, Nov., 1940.

ie survey was the number of requests for men whose training and/or
xperience made them competent to handle assignments involving more
ian one of the major branches of engineering. It was also surprising to
ote that only one employer definitely specified registration as a profes-
onal engineer as a requirement.

Perhaps the most significant indication of the whole survey was that
ised on a comparison of salary trends of professional engineers with those
f pre-professional and sub-professional groups. It was quite clear in the
ialysis of job orders, of placement records, and of applicant's file that,
though professional grades of engineering had not suffered quite such
astic salary reductions during the depression as the lower grades of engi-
eering, the salaries of professionals did not rebound as rapidly as did the
iy of men in lower grades of practice. The same condition was apparent
the "Before and After VJ Day" survey. Perhaps two factors were
sponsible for the marked improvement in pre-professional and sub-
ofessional salaries. One was the overtime provision of the Fair Labor
tandards Act. The other was unionization of the lower ranks. It was
ontended that increases in compensation for men in beginning grades of
igineering would automatically boost pay of professional engineers. It
as assumed that the pre-depression differential would be maintained and
ery time lower ranking employees in the engineering department got
ises their superiors would get proportionate increases. This has not
oved true; the principal complaint of the engineer unions today is that
en with five, ten, fifteen, or more years of experience (although they
ive had some salary increases) have never made up the lag of depression
iys and are being paid a scale which is not commensurate with the high
iy given recent graduates.

Engineer unions find themselves handicapped by lack of information
i prevailing salary scales and classifications of engineering positions. It
as principally to over come this difficulty that some of the unions com-
osed of professional engineers and designated as their official representa-
ve in bargaining have united in national organizations made up of sim-
ar groups, while other such bargaining units have affiliated with the AFL-
IO. Pooling their resources they hoped, through a national representa-
ve, to establish authoritative standards of classification with accurate
id uniform job descriptions and to work out corresponding salary scales.
iability of Engineers and Scientists of America to do this job accounts
part for its practical disintegration after its 1957 annual meeting. Engi-
eering societies in coalitions and through joint agencies have experi-
iced difficulty in similar activities. No agency, acting on authority con-
tionally delegated to it by sponsors who reserve the right of veto or
vision can do what so sorely needs to be done. Only an inclusive society,
pported directly by all members of the profession, can do the things that
ust be done to improve the social and economic status of engineers—both
iployees and employers.

Books of Interest to Engineers

Keep posted . . . Know what is happening in your profession . . . the book you need is not listed, we can get it for you. The A.A.E. boo department is always glad to make recommendations on any techni subject. The service was inaugurated for your convenience. Make u of it.

Highways Over Broad Waters, by William Ratigan. Wm. B. Eerdmans Publishing Company. $6.00

A most interesting book about a remarkable engineer. It is the life story of the greatest bridgebuilder in history, Dr. David B. Steinman of New York. An inspirational story that should be read by every young American.

Theory of Internal Guidance, by Connie L. McClure, Advisory Mathematician, Federal Systems Division, International Business Machines Corp. Prentice-Hall, Inc. $12.00

The text is a clear, penetrating approach to the study of inertial guidance and navigation. No comparable volume makes a more timely or valuable contribution to the understanding of basic inertial systems and their elemental configuration. Comprehensive, scientific, and sound in theory.

Handbook of Automation, Computation, and Control, Volume 2, edited by Eugene M. Grabbe, Simon Ramo, and Dean E. Wooldridge. John Wiley & Sons, Inc., Chapman & Hall, Limited. $17.50

Describing this important book, Gordon S. Brown, Dean, School of Engineering, M.I.T., says: "in both their organization of material and selection of substance, the editors have given technologists a unified work of lasting value. It truly represents today's optimum package of that body of knowledge that will be negotiable at par by technologists for many years to come in a wide range of disciplines."

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Experimental Music, by Lejaren Hiller, Jr., Assistant Professor Music, School of Music, Univers of Illinois, and Leonard M. Isaacs Mathematician, Standard Oil Co pany of California. McGraw-H Book Company. $6.80

This is the first book presenting application of scientific method to m sical composition. It describes in det the techniques used to produce mu by means of electronic automatic hig speed digital computers, and demo strates to musicians that the basic te ıues for applying these instruments to ısical problems are essentially sim- and that an extensive scientific ckground is not required to use them.

ysical Metallurgy, by Bruce Chalners, Gordon McKay Professor of Metallurgy, Division of Engineering ınd Applied Physics, Harvard University. John Wiley & Sons, Inc., Chapman & Hall, Limited. $12.50

The book presents, in logical order, ideas and concepts that have led to l resulted from the great advance in understanding of the behavior of tals and alloys which has occurred the last few decades. The first textok on physical metallurgy that inporates the more recently introced ideas.

eory of Thermal Stresses, Bruno A. Boley, Professor of C.E., and Jerome H. Weiner, Professor of M.E., Columia University. John Wiley & Sons, nc. $15.50

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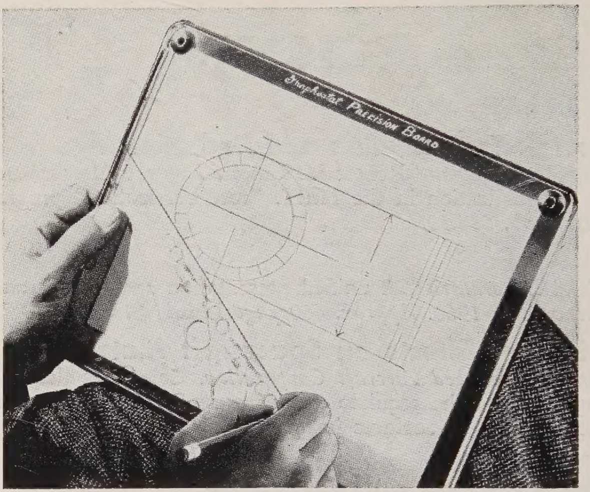

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